AMENDMENTS TO THE CLAIMS

1. (Currently amended) A microfluidic device comprising one, two or more microchannel structures ~~(101a-h)~~, each of which comprises a reaction microcavity ~~(104a-h)~~ intended for retaining a solid phase material in the form of a wet porous bed, ~~characterized in that~~wherein each of said one, two or more microchannel structures ~~(101a-h)~~ comprises the solid phase material in a dry state that comprises a bed-preserving agent comprising one or more compounds having bed-preserving activity.

2. (Currently amended) The microfluidic device according to of claims 1, ~~characterized in that~~ wherein at least one of said one or more compounds a) exhibit a hydrophilic group that may or may not be non-ionic, and b) are water-soluble.

3. (Currently amended) The microfluidic device according to ~~any of~~ claims 1~~-2~~, ~~characterized in that~~wherein at least one of said one or more compounds is a polyol.

4. (Currently amended) The microfluidic device according to ~~any of~~ claims 1~~-3~~, ~~characterized in that~~ wherein at least one of said one or more compounds exhibits a carbohydrate structure ~~polysaccharide structure or oligosaccharide structure~~.

5. (Currently amended) The microfluidic device according to ~~any of~~ claims 1~~-4~~, ~~characterized in that~~wherein at least one of said one or more compounds is a disaccharide~~, preferably trehalose~~.

6. (Currently amended) The microfluidic device of ~~any of~~ claims 1~~-5~~, ~~characterized in that~~wherein at least one of said compounds is a microcavity adherence agent.

7. (Currently amended) The microfluidic device according to ~~any of~~ claims ~~1-6,~~ ~~characterized in that~~wherein said solid phase material that is in a dry state comprises a non-volatile buffer~~, e.g. a phosphate buffer possibly with potassium ion as a counter-ion~~.

8. (Currently amended) The microfluidic device according to claim 1 ~~-7~~, ~~characterized in that~~ wherein said dry state has been accomplished within the microfluidic device.

9. (Currently amended) The microfluidic device according to ~~any of~~ claims 1 ~~-8~~, ~~characterized in that~~wherein said dry state has been obtained under subatmospheric pressure from the porous bed saturated with an aqueous liquid~~, for instance~~ above or below the freezing point of the liquid, or by drying the porous bed saturated with water in ambient atmosphere with or without warming.

10. (Currently amended) The microfluidic device according to ~~any of~~ claims 1 ~~-9~~, ~~characterized in that~~wherein
    a) said solid phase material is in the form of porous or non-porous particles, and
    b) the porous bed is a packed bed of these particles.

11. (Currently amended) The microfluidic device according to ~~any of~~ claims 1 ~~-10~~, ~~characterized in that~~wherein said solid phase material is swellable or not swellable.

12. (Currently amended) The microfluidic device according to ~~any of~~ claims 1 ~~-11~~, ~~characterized in that~~wherein each of said one, two or more microchannel structures ~~(101a-h)~~ comprises an inlet arrangement ~~(102,103a-h)~~ with a volume-metering unit ~~(106a-h,108a-h)~~ connected to the reaction microcavity ~~(104a-h)~~.

13. (Currently amended) The microfluidic device according to ~~any of~~ claims 1 ~~-12~~, ~~characterized in that~~wherein the device comprises two or more microchannel structures ~~(101a-h)~~ that are divided into one, two or more groups ~~(100)~~ of microchannel structures, each group comprising an inlet arrangement ~~(102)~~ which
    a) is common to all the microchannel structures of the group ~~(100)~~, and
    b) comprises
        (i) a common inlet port ~~(105a-b)~~, and
        (ii) for each microchannel structure ~~(101a-h)~~ of the group, a volume-metering unit ~~(106a-h)~~ that in the upstream direction is connected to the common inlet ~~(105a-b)~~

port and in the downstream direction to the reaction microcavity ~~(104a-h)~~ of the microchannel structure ~~(101a-h)~~.

14. (Currently amended) The microfluidic device according to ~~any of~~ claims 1~~2-13~~, ~~characterized in that~~ wherein the inner wall of each of said volume-metering units ~~(106a-h,108a-h)~~ have a sufficient hydrophilicity for being filled by capillarity once an aqueous liquid have entered the unit, and b) a valve ~~(109a-h,110a-h)~~ at its outlet~~, for instance a passive valve~~.

15. (Currently amended) The microfluidic device according to ~~any of~~ claims 1~~-14~~, ~~characterized in that~~wherein each microchannel structure ~~(101)~~ is designed for driving a liquid flow through at least a portion of the structure by centrifugal force.

16. (Currently amended) The microfluidic device according to ~~any of~~ claims 1~~-15~~, ~~characterized in that~~wherein the solid phase material comprises an immobilized reactant~~, typically an immobilized affinity reactant AC_S for affinity capturing a solute S~~.

17. (Currently amended) The microfluidic device according to claim 16, ~~characterized in that~~wherein the immobilized reactant is an immobilized ligand L which is a member of an immobilizing affinity pair comprising L and the affinity counterpart B to L and which is intended for the immobilization of a conjugate B-AC_S to the porous bed where AC_S is an affinity counterpart to a solute S.

18. (canceled)

19. (Currently amended) The microfluidic device according to claim ~~1~~817, ~~characterized in that~~wherein the affinity constant in mol/l for ~~of~~ the immobilizing affinity pair~~, i.e. $K_{L'\cdot B'} = [L'][B']/[L'\cdot B']$~~, is at most 10^3 times larger than the corresponding affinity constant for streptavidin and biotin~~, with preference for the affinity pair L' and B' being selected from biotin-binding compounds and streptavidin-binding compounds, respectively, or vice versa~~.

20. (Currently amended) The microfluidic device according to claim ~~19~~17, ~~characterized in that~~wherein B has one or more binding sites for L, and L has two or more binding sites for B~~, or vice versa~~.

21. (Currently amended) The microfluidic device according to ~~any of~~ claims ~~16~~17~~-20~~, ~~characterized in that~~wherein at least one of S and AC_S and/or at least one of L, B, AC_S and S comprise a structure selected from the group consisting of ~~amongst peptide structure including~~ poly/oligo-peptide and protein structure, carbohydrate structure, nucleotide structure ~~including nucleic acid structure,~~ and lipid structure.

22. (New) The microfluidic device according to claim 4, wherein the carbohydrate structure is a polysaccharide structure or an oligosaccharide structure.

23. (New) The microfluidic device according to claim 5, wherein the disaccharide is trehalose.

24. (New) The microfluidic device according to claim 7, wherein the non-volatile buffer is a phosphate buffer.

25. (New) The microfluidic device according to claim 17, wherein one of L and B is selected from while the other one is selected from streptavidin-binding compounds.

26. (New) The microfluidic device according to claim 17, wherein L has one or more binding sites for B, and B has two or more binding sites for L.

27. (New) The microfluidic device according to claim 1, wherein the solid phase material comprises an immobilized affinity reactant for affinity capturing of a solute S.

28. (New) The microfluidic device according to claim 24, wherein the buffer has potassium as a counter-ion.

29. (New) The microfluidic device according to claim 27, wherein the affinity constant for formation of the complex between the solute and the affinity counterpart to the solute is at most 10^{-6} mole/l.